

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/Ala Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-015746**Date Inspected:** 07-Jul-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Tower and OBG Components**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance Inspector (QA Inspector) George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 11

This QA Inspector randomly observed the following work in progress in Bay 11:

SMAW welding of weld joint ESD1-SPSA5-7-3A located on PCMK east tower, lift 5, internal splice plate assembly. Welder was identified as 046709. QC was identified as ZPMC CWI Gao Zhi Chun (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Mao Bin Bin, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-3211-TC-U5b-1.

Bay 10

This QA Inspector randomly observed the following work being performed in Bay 10:

FCAW welding of weld joints EP3017-001-069, 070. Welder was identified as 053870. QC was identified as ZPMC CWI QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Lu Wei Chao, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

OBG Trial Assembly Area

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This QA Inspector randomly observed the following work in progress in the OBG Trial Assembly Area:

FCAW repair welding of weld joint SEG054B-010 located on PCMK 9CE, between panel points 76 and 77, longitudinal diaphragm LD11B to bottom plate which had been previously removed. Welder was identified as 220067. QC was identified as Liu Hua Jie (QC2). Welding variables recorded by QC2 appeared to comply with WPS-T-2132 as listed on ZPMC Weld Repair Report B-WR13818. The report displayed the items as 9BE+9CE L. D. and the drawing number was LD11B, LD12B, LD17C, LD18C.

Heavy Dock

This QA Inspector randomly observed the following work being performed on the Heavy Dock:

This QA Inspector observed no welding related work was being performed on the heavy dock. All 4 tower lifts 2 were erect with all 4 tower lifts 3 attached above, respectively. The lifts 2/3 worker access tower elevator was unmanned and dark. Crossbeams 7, 8, 9, and 10 had been placed on the ship moored to the end of the Heavy Dock. The open ends of crossbeams 7 and 8 were covered with plastic tarps.

OBG segment 7E was midway out on the Heavy dock, sitting on 6 Goldhofer heavy transport vehicles. ZPMC personnel were grinding areas that appear to have been where the segment had previously been sitting on blocking and were unpainted. ABF Representatives, including Zhang Xiao Bin, were present and appeared to be monitoring the work. See photos below.

Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3100 for deck panels DP3100(PL3196A/B/C)-001 and DP3105(PL3201A/B/C)-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root openings to be within the 0.0 to 0.5mm tolerance. The magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Wang Wei on 7/7/10.

The visual inspection of tack welds and root gaps was performed by ABF Representative Huang Wen Guang (PABF), ZPMC CWI Guo Yan Fei (PQC), and this QA Inspector. The tack welds and root gaps appeared to be within prescribed tolerances. This QA Inspector observed that the deck plate of the test panel was 20mm thick and the deck plate of the production panels were 20mm thick. This QA Inspector observed that the test panel was generally representative of the production panels. The ambient temperature was approximately 28°C. Welders were identified respectively, from position 1 through 4, as follows: 059418, 059421, 059416, 201788,. ZPMC personnel used an oxy-fuel torch to preheat the specimens to above 60°C and the interpass temperature was still above 60°C without additional heating, in conformance with WPS-B-T-2342-U1-(U-rib)-5. The start time for welding of the 2–12mm x 20mm specimens was approximately 0056 hours on 7/8/10 and the finish time was approximately 0117 hours. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the gas metal arc welding (GMAW) and submerged arc welding (SAW) processes, welds 1 thru 4 at the completion of both the GMAW root pass and SAW cover pass. The welding variables recorded by PQC appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF, PQC and this QA Inspector. PQC and PABF informed this QA Inspector that all four welds were acceptable and after random inspection this QA Inspector concurred. This QA inspector randomly witnessed ZPMC ultrasonic testing (UT) inspector, identified as Xue Hai Rong, perform UT on each of the 500 mm test welds for depth of penetration and conformance. This QA Inspector selected ten designated locations for macroetch sampling per contract requirements. Each macroetch sample location was stamped by ZPMC personnel with the number 3100, a number

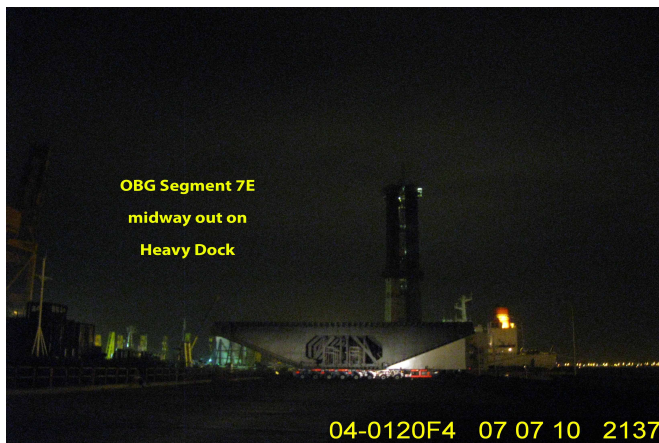
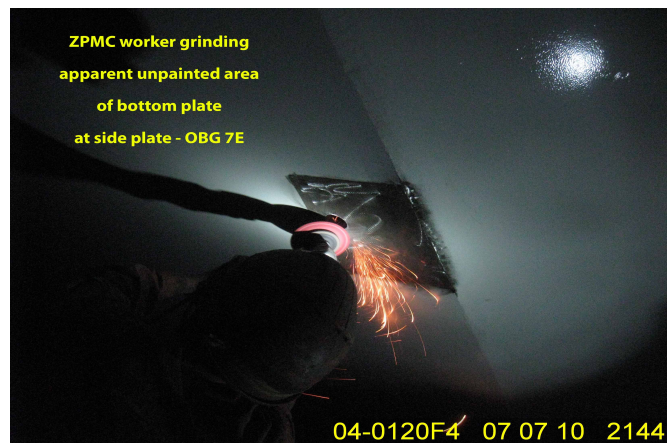
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3, chosen randomly by this QA Inspector as a verification mark, and an individual progressive macroetch identifying number for each macroetch sample. After removal from each of the weld test specimens, polishing, and acid etching of the selected end, the macroetch samples were evaluated using a 7X optical magnifier and accepted by PQC, PABF, and this QA Inspector.

All ten sample macroetch samples appeared to meet requirements and were noted to appear acceptable. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 7/8/2010 for additional information.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.



Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang, 150-0042-2372, who represents the Office of Structural Materials for your project.

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Inspected By: Goulet, George

Quality Assurance Inspector

Reviewed By: Dawson, Paul

QA Reviewer